

CLAIMS:

What is claimed is:

1 1. A process for reforming a planar pre-finished medium density fiber (MDF) board
2 having at least one pre-finished surface which carries at least one coating, said process
3 comprising the steps of:

4 placing the planar pre-finished medium density fiber board in a heated press mold;
5 closing the heated press mold while the pre-finished medium density fiber board is
6 located therein;

7 applying pressure and heat to the pre-finished medium density fiber board using said
8 heated press mold so that said at least one pre-finished surface is reformed without cracking,
9 bubbling, or removal of said at least one coating;

10 opening the heated press mold; and

11 removing the pre-finished medium density fiber board from the heated press mold.

1 2. The process of claim 1, wherein said heated press mold has at least one relief
2 surface and wherein said step of applying pressure and heat is performed so that said at least
3 one relief surface reforms at least a portion of said at least one pre-finished surface of the pre-
4 finished medium density fiber board.

1 3. The process of claim 2, wherein said at least one relief surface is configured and
2 said step of applying pressure and heat is performed so that said at least one pre-finished
3 surface is reformed to a depth of no more than 0.045 inch in depth.

1 4. The process of claim 1, wherein said at least one coating comprises at least one
2 pigment layer and at least one protective top layer applied over said at least one pigment
3 layer.

1 5. The process of claim 4, wherein said at least one pigment layer and said at least
2 one protective top layer are applied over at least one ground layer which serves as a primer.

1 6. The process of claim 4, wherein said at least one protective top layer includes a
2 release agent which prevents said at least one protective top layer from adhering to the heated
3 press mold during said step of applying heat and pressure.

1 7. The process of claim 1, further comprising the step of remoisturizing said pre-
2 finished medium density fiber board after said step of applying pressure and heat to a
3 predetermined moisture content.

1 8. The process of claim 1, wherein said heated press mold is heated to a temperature
2 sufficient to soften resin in said at least one coating so that fibers and said resin tend to flow
3 rather than break during reforming of said at least one pre-finished surface, and wherein said
4 temperature is sufficiently low to prevent sticking of said at least one coating to the heated
5 press mold.

1 9. The process of claim 8, wherein said heated press mold is heated to about 400°F
2 and said pressure is about 1100 pounds per square inch during said step of applying pressure
3 and heat.

1 10. The process of claim 1, wherein said at least one pre-finished surface is provided
2 using a pre-finishing method comprising the steps of:

3 applying a ground layer to at least one major surface of a raw medium density fiber
4 board;

5 applying at least one pigment layer over said ground layer; and

6 applying at least one polymer top layer over said at least one pigment layer, said at
7 least one polymer top layer having a release agent which prevents said at least one polymer
8 top layer from adhering to said heated press mold during said step of applying pressure and
9 heat.

1 11. The process of claim 10, wherein:

2 said raw medium density fiber board is about 0.125 inch thick;

3 said ground layer is applied to the raw medium density fiber board with a thickness of
4 about 1 mil;

5 said at least one pigment layer comprises two pigment layers, each of the two pigment
6 layers having a thickness of about 1 mil; and

7 said at least one polymer top layer comprises two polymer top layers, each of the two
8 polymer top layers having a thickness of about 0.5 mil.

1 12. The process of claim 1, wherein said at least one pre-finished surface is provided
2 using a pre-finishing method comprising the steps of:

3 applying at least one pigment layer to at least one major surface of a raw medium
4 density fiber board; and

5 applying at least one polymer top layer over said at least one pigment layer, said at
6 least one polymer top layer having a release agent which prevents said at least one polymer
7 top layer from adhering to said heated press mold during said step of applying pressure and
8 heat.

1 13. The process of claim 12, wherein:

2 said raw medium density fiber board is about 0.125 inch thick;
3 said at least one pigment layer comprises three pigment layers, each of the three
4 pigment layers having a thickness of about 0.3 mil; and
5 said at least one polymer top layer has a thickness of about 0.15 to 0.2 mil.

1 14. The process of claim 1, wherein:

2 said pre-finished medium density fiber board is a flat, pre-finished door skin;
3 said heated press mold has at least one relief surface; and
4 said step of applying pressure and heat is performed so that said at least one relief
5 surface reforms said at least one pre-finished surface with at least one ornamental feature.

1 15. The process of claim 14, wherein said at least one relief surface is configured so
2 that said at least one ornamental feature includes simulated door panels.

1 16. The process of claim 14, wherein said at least one relief surface is configured so
2 that said at least one ornamental feature includes a simulated wood grain texture.

1 17. The process of claim 15, wherein said at least one relief surface is configured so
2 that said at least one ornamental feature includes both a simulated wood grain texture and
3 simulated door panels, and wherein said simulated wood grain texture is reformed to a
4 shallower depth than said simulated door panels.

1 18. The process of claim 14, wherein said at least one relief surface is configured and
2 said step of applying pressure and heat is performed so that reforming of said at least one pre-
3 finished surface is no greater than 0.045 inch in depth.

1 19. The process of claim 14, further comprising the step of remoisturizing said pre-
2 finished medium density fiber board after said step of applying pressure and heat, to replace
3 moisture lost by said pre-finished medium density fiber board during said step of applying
4 pressure and heat.

1 20. The process of claim 14, wherein said heated press mold is heated to a
2 temperature sufficient to soften resin in said at least one coating so that fibers and said resin
3 tend to flow rather than break during reforming of said at least one pre-finished surface, and
4 wherein said temperature is sufficiently low to avoid sticking of said at least one coating to
5 the heated press mold.

1 21. The process of claim 14, wherein said heated press mold is heated to about 400°F
2 and said pressure is about 1100 pounds per square inch during said step of applying pressure
3 and heat.

1 22. The process of claim 14, wherein said at least one pre-finished surface is provided
2 using a pre-finishing method comprising the steps of:

3 applying a ground layer to at least one major surface of a flat, raw medium density
4 fiber board;

5 applying at least one pigment layer over said ground layer; and

6 applying at least one polymer top layer over said at least one pigment layer, said at
7 least one polymer top layer having a release agent which prevents said at least one polymer
8 top layer from adhering to said heated press mold during said step of applying pressure and
9 heat.

1 23. The process of claim 22, wherein:

2 said flat, raw medium density fiber board is about 0.125 inch thick;

3 said ground layer is applied to the raw medium density fiber board with a thickness of
4 about 1 mil;

5 said at least one pigment layer comprises two pigment layers, each of the two pigment
6 layers having a thickness of about 1 mil; and

7 said at least one polymer top layer comprises two polymer top layers, each of the two
8 polymer top layers having a thickness of about 0.5 mil.

1 24. The process of claim 14, wherein said at least one pre-finished surface is provided
2 using a pre-finishing method comprising the steps of:

3 applying at least one pigment layer to at least one major surface of a flat, raw medium
4 density fiber board; and

5 applying at least one polymer top layer over said at least one pigment layer, said at
6 least one polymer top layer having a release agent which prevents said at least one polymer
7 top layer from adhering to said heated press mold during said step of applying pressure and
8 heat.

1 25. The process of claim 24, wherein:

2 said flat, raw medium density fiber board is about 0.125 inch thick;
3 said at least one pigment layer comprises three pigment layers, each of the three
4 pigment layers having a thickness of about 0.3 mil; and

5 said at least one polymer top layer has a thickness of about 0.15 to 0.2 mil.

1 26. A medium density fiber (MDF) board product comprising a pre-finished medium
2 density fiber (MDF) board having at least one pre-finished surface which carries at least one
3 coating, said at least one pre-finished surface and said at least one coating on said board being
4 press-molded to provide a reformed feature therein after application of said at least one
5 coating.

- 1 27. The medium density fiber (MDF) board product of claim 26, wherein said
2 embossed feature has a depth no greater than 0.045 inch.
- 1 28. The medium density fiber (MDF) board product of claim 26, wherein said at least
2 one coating comprises at least one pigment layer and at least one protective top layer applied
3 over said at least one pigment layer.
- 1 29. The medium density fiber (MDF) board product of claim 28, wherein said at least
2 one pigment layer and said at least one protective top layer are applied over at least one
3 ground layer which serves as a primer.
- 1 30. The medium density fiber (MDF) board product of claim 28, wherein said at least
2 one protective top layer includes a release agent which prevents sticking of said top layer to a
3 heated press mold during a press-molding operation.
- 1 31. The medium density fiber (MDF) board product of claim 26, further comprising a
2 moisture content after reforming of 6% to 8%.
- 1 32. The medium density fiber (MDF) board product of claim 26, wherein:
2 said raw medium density fiber board is about 0.125 inch thick; and
3 said at least one coating includes:
4 a ground layer applied to the raw medium density fiber board with a thickness
5 of about 1 mil;

6 at least two pigment layers, each of said at least two pigment layers having a
7 thickness of about 1 mil; and
8 at least two polymer top layers, each of said at least two polymer top layers
9 having a thickness of about 0.5 mil.

1 33. The medium density fiber (MDF) board product of claim 26, wherein:
2 said raw medium density fiber board is about 0.125 inch thick; and
3 said at least one coating includes:
4 at least three pigment layers, each of said at least three pigment layers having a
5 thickness of about 0.3 mil; and
6 at least one polymer top layer having a thickness of about 0.15 to 0.2 mil.

1 34. The medium density fiber (MDF) board product of claim 26, wherein said pre-
2 finished medium density fiber board is a flat, pre-finished door skin.

1 35. The medium density fiber (MDF) board product of claim 34, wherein said
2 reformed feature includes simulated door panels.

1 36. The medium density fiber (MDF) board product of claim 34, wherein said
2 reformed feature includes a simulated wood grain texture.

1 37. The medium density fiber (MDF) board product of claim 34, wherein said
2 reformed feature includes both a simulated wood grain texture and simulated door panels, and

3 wherein said simulated wood grain texture has a shallower depth than said simulated door
4 panels.

1 38. A process for making a pre-finished medium density fiber (MDF) board which is
2 reformable after finishing, said process comprising the steps of:

3 applying at least one pigment layer to at least one major surface of a planar raw
4 medium density fiber board; and

5 applying at least one polymer top layer over said at least one pigment layer, said at
6 least one polymer top layer having a release agent which prevents said at least one polymer
7 top layer from adhering to said heated press mold during press molding,

8 wherein said at least one pigment layer and said at least one polymer top layer are
9 applied using materials and thicknesses thereof which are capable of withstanding press-
10 molding at temperatures and pressures sufficient to reform said at least one pigment layer and
11 said at least one polymer layer, without cracking, bubbling, and adherence to a press mold.

1 39. The process of claim 38, wherein:

2 said raw medium density fiber board is about 0.125 inch thick;

3 said at least one pigment layer comprises three pigment layers, each of the three
4 pigment layers having a thickness of about 0.3 mil; and

5 said at least one polymer top layer has a thickness of about 0.15 to 0.2 mil.

1 40. The process of claim 38, wherein said at least one pigment layer and said at least
one polymer top layer are applied using a rolling process.